## SEQUENCE LISTING

```
<110> Cosgrove, Dominic
 <120>
        Immunodiagnostic Determination Of Usher Syndrome Type IIa
 <130>
        249.00020101
 <150> US 60/237,834
 <151>
        2000-10-03
 <160>
170>
210>
        PatentIn version 3.0
<211>
        23
<212>
        PRT
<213> Artificial
_____<220>
<223>
        Immunogen
 <400> 1
 Gln Ala Pro Pro Gln Thr Gln Gly Pro Pro Thr Val Trp Lys Ile Ser 1 \hspace{1cm} 15
 Pro Thr Glu Leu Arg Ile Glu
20
 <210> 2
 <211> 201
 <212> PRT
 <213> Homo sapiens
 <400> 2
```

Pro Leu Ala Gln Arg Tyr Cys Ile Pro Asn Asp Ala Gly Asp Thr Ala 10 15Asp Asn Arg Val Ser Arg Leu Asn Pro Glu Ala His Pro Leu Ser Phe 20 30 Val Asn Asp Asn Asp Val Gly Thr Ser Trp Val Ser Asn Val Phe Thr 35 40 45 Asn Ile Thr Gln Leu Asn Gln Gly Val Thr Ile Ser Val Asp Leu Glu 50 60 Asn Gly Gln Tyr Gln Val Phe Tyr Ile Ile Gln Phe Phe Ser Pro 65 70 75 80 Gln Pro Thr Glu Ile Arg Ile Gln Arg Lys Lys Glu Asn Ser Leu Asp 85 90 95 Trp Glu Asp Trp Gln Tyr Phe Ala Arg Asn Cys Gly Ala Phe Gly Met
100 105 110 Asn Asn Gly Asp Leu Glu Lys Pro Asp Ser Val Asn Cys Leu Gln 115 120 125 Leu Ser Asn Phe Thr Pro Tyr Ser Arg Gly Asn Val Thr Phe Ser Ile 130 135 140 Leu Thr Pro Gly Pro Asn Tyr Arg Pro Gly Tyr Asn Asn Phe Tyr Asn 145 150 155 160 thr Pro Ser Leu Gln Glu Ser Val Lys Ala Thr Gln Ile Arg Phe His 165 170 175 Phe His Gly Gln Tyr Tyr Thr Thr Glu Thr Ala Val Asn Leu Arg His
180 185 190 Arg Tyr Tyr Ala Val Asp Glu Ile Thr 195 200 <210> 3 <21**1**> 6330 <212> DNA <213> Homo sapiens

<400> 3
tgtttgctct gcagaatact ttacctgggc accaagtctt ccttccagca ttcctgctgc 60
tacagcctat ttgctgagta accaggggtt acagcagcgt tgccaggcaa cgagggacag 120
cggtcctgtt gaagagccat ttgtcacact gaggggactg gttgaaatgc aataaagaaa 180
tgataccagc agctactcat gtcttcgcca ttgctaagaa cgtcgttggt attaccttac 240
tctgagaacg tgtctgcagt ttccagaaaa tggagtatcg caacatcact taaagtaccc 300
tgcttcaaag tattgctggc aagtggcgtg ggcctgatta tttattaga aatgctttat 360
caggaggaga atgctttttg taaacatgaa ttgcccagtt ctttcattgg gctctggctt 420

cttgtttcag	gtcattgaaa	tgttgatctt	tgcctatttt	gcttcaatat	ccttgactga	480
gtcacgaggt	cttttcccaa	ggctggagaa	cgtgggagct	ttcaagaaag	tttccatcgt	540
gccaacccaa	gcagtatgtg	gactcccaga	ccgaagcact	ttttgtcaca	gctctgctgc	600
tgctgaaagt	attcagttct	gtacccagcg	gttttgtatt	caggattgcc	catacagatc	660
ttcacaccct	acctacactg	cccttttctc	agcaggcctc	agtagctgca	tcacaccaga	720
caagaatgat	ctgcatccta	acgcccatag	caattctgca	agttttattt	ttggaaatca	780
caagagctgc	ttttcttctc	ctccttctcc	aaagctgatg	gcatcattta	ccttagctgt	840
atggctgaaa	cctgagcaac	aaggtgtaat	gtgtgttata	gaaaagacrg	tagatgggca	900
gattgtgttc	aaacttacaa	tatctgagaa	agagaccatg	ttttattatc	gcacagtaaa	960
tggtttgcaa	cctccaataa	aagtaatgac	actggggaga	attcttgtga	agaaatggat	1020
tcatcttagt	gtgcaggtgc	atcagacaaa	aatcagcttc	tttatcaatg	gcgtggagaa	1080
ggatcataca	cctttcaatg	caagaactct	aagtggttca	attacagatt	ttgcatctgg	1140
tactgtgcaa	ataggacaga	gtttaaatgg	tttagagcag	tttgtcggaa	gaatgcaaga	1200
ttttcgatta	taccaagtgg	cacttacaaa	cagagagatt	ctggaagtct	tctctggaga	1260
tcttctcaga	ttgcatgccc	aatcacattg	ccgttgccct	ggcagccacc	cgcgggtcca	1320
ccctttggca	cagcggtact	gcattcctaa	tgatgcagga	gacacagctg	ataatagagt	1380
gtcacggttg	aatcctgaag	cccatcctct	ctcttttgtc	aatgataatg	atgttggtac	1440
ttcatgggtt	tcaaatgtgt	ttacaaacat	tacacagctt	aatcaaggag	tgactatttc	1500
agttgatttg	gaaaatggac	agtatcaggt	gttttatatt	atcattcagt	tctttagtcc	1560
acaaccaacg	gaaataagga	ttcaaaggaa	gaaggaaaat	agtttagatt	gggaggactg	1620
gcaatatttt	gccaggaatt	gtggtgcttt	tggaatgaaa	aacaatggag	atttggaaaa	1680
acctgattct	gtcaactgtc	ttcagctttc	caattttact	ccatattccc	gtggcaatgt	1740
cacatttagc	atcctgacac	ctggaccaaa	ttatcgtcct	ggatacaata	acttctataa	1800
taccccatct	cttcaagagt	ccgtaaaagc	cacgcaaata	aggtttcatt	ttcatgggca	1860
gtactataca	actgagactg	ctgttaacct	cagacacaga	tattatgcag	tggacgaaat	1920
caccattagt	gggagatgtc	agtgccatgg	tcatgccgat	aactgcgaca	caacaagcca	1980
gccatataga	tgcctctgct	cccaggagag	cttcactgaa	ggacttcatt	gtgatcgctg	2040
cttgcctctt	tataatgaca	agcctttccg	ccaaggtgat	caagtttacg	ctttcaattg	2100
taaaccttgt	caatgcaaca	gccattccaa	aagctgccat	tacaacatct	ctgtagaccc	2160
atttcctttt	gagcacttca	gagggggagg	aggagtttgt	gatgattgtg	agcataacac	2220
tacaggaagg	aactgtgagc	tgtgcaagga	ttactttttc	cgacaagttg	gtgcagatcc	2280
ttcggccata	gatgtttgca	aaccctgtga	ctgtgataca	gttggcacta	gaaatggtag	2340

cattctttgt	gatcagatto	gaggacagtg	ı taattgtaag	agacacgtgt	ctggcaggca	2400
gtgcaatcag	; tgccagaatg	gattctacaa	tctacaagag	ttggatcctg	atggctgcag	2460
tccctgtaac	tgcaatacct	ctgggacagt	ggatggagat	attacctgtc	accaaaattc	2520
aggccagtgc	: aagtgcaaag	caaacgttat	tgggcttagg	tgtgatcatt	gcaattttgg	2580
atttaaattt	ctccgaagct	ttaatgatgt	tggatgtgag	ccctgccagt	gtaacctcca	2640
tggctcagtg	aacaaattct	gcaatcctca	ctctgggcag	tgtgagtgca	aaaaagaagc	2700
caaaggactt	cagtgtgaca	cctgcagaga	aaacttttat	gggttagatg	tcaccaattg	2760
taaggcctgt	gactgtgaca	cagctggatc	cctccctggg	actgtctgta	atgctaagac	2820
agggcagtgc	atctgcaagc	ccaatgttga	agggagacag	tgcaataaat	gtttggaggg	2880
aaacttctac	ctacggcaaa	ataattcttt	cctctgtctg	ccttgcaact	gtgataagac	2940
tgggacaata	aatggctctc	tgctgtgtaa	caaatcaaca	ggacaatgtc	cttgcaaatt	3000
aggggtaaca	ggtcttcgct	gtaatcagtg	tgagcctcac	aggtacaatt	tgaccattga	3060
caattttcaa	cactgccaga	tgtgtgagtg	tgattccttg	gggacattac	ctgggaccat	3120
ttgtgaccca	atcagtggcc	agtgcctgtg	tgtgcctaat	cgtcaaggaa	gaaggtgtaa	3180
tcagtgtcaa	ccaggttttt	atatttctcc	aggcaatgcc	actggctgcc	tgccatgctc	3240
atgccataca						3300
ccaagatgct	tccattgctg	ggcaacgttg	tgaccaatgc	aaagaccatt	actttggatt	3360
tgatcctcag	actggaagat	gtcagccttg	taattgtcat	ctctcaggag	ccttgaatga	3420
aacctgtcac	ttggtcacag	gccagtgttt	ctgtaaacaa	tttgtcactg	gctcaaagtg	3480
tgatgcttgt	gttcccagtg	caagccactt	ggatgtcaac	aatctattgg	gttgcagcaa	3540
aactccattc	cagcaacctc	cgcccagagg	acaagttcaa	agttcttctg	ctatcaatct	3600
ctcctggagt	ccacctgatt	ctccaaatgc	ccactggctt	acttacagtt	tactcaggga	3660
tggttttgaa	atctacacaa	cagaggatca	atacccatac	agtattcaat	acttcttaga	3720
cacagacctg	ttaccatata	ccaaatattc	ctattacatt	gagaccacca	atgtgcatgg	3780
ttcaacaagg	agtgtagctg	tcacttacaa	gacaaaacca	ggggtcccag	agggaaactt	3840
gactttaagt	tatatcattc	ctattggctc	agactctgtg	acacttacct	ggacaacact	3900
ctcaaatcaa	tctggtccca	tagagaaata	tattttgtcc	tgtgcccctt	tggctggtgg	3960
tcagccatgt	gtttcctacg	aaggtcatga	aacctcagct	accatctgga	atctggttcc	4020
atttgccaag	tacgattttt	ctgtacaggc	gtgtactagc	gggggctgtt	tacacagctt	4080
gcccattaca	gtgaccacag	cccaggcccc	tccccaaaga	ctaagtccac	ctaagatgca	4140
gaaaatcagt	tctacagaac	ttcatgtaga	atggtctcca	ccagcggaac	taaatggaat	4200
aattataaga	tatgaactat	acatgagaag	actgagatct	actaaagaaa	ccacatctga	4260

ggaaagtcga	gtttttcaga	gcagtggttg	gctcagtcct	: cattcatttg	tagaatcggc	4320
caatgaaaat	gcattaaaac	ctcctcaaad	aatgacaaco	atcactggct	tggagccata	4380
caccaagtat	gagttcagag	tcttagctgt	gaatatggct	ggaagtgtgt	cttctgcctg	4440
ggtctcagaa	. agaacgggag	aatcagcaco	tgtattcatg	atccctcctt	cagtctttcc	4500
cctctcttcg	tactctctca	atatctcctg	ggagaagcca	gcagataatg	ttacaagagg	4560
aaaagttgtg	gggtatgaca	tcaatatgct	ttctgaacaa	tcacctcaac	agtctattcc	4620
catggcgttt	tcacagctgt	tgcacactgc	taaatcccaa	gaactatctt	acactgtaga	4680
aggactgaaa	ccttatagga	tatatgagtt	tactattact	ctctgcaatt	cagttggttg	4740
tgtgaccagt	gcttcgggag	caggacaaac	tttagcagca	gcaccagcac	aactgaggcc	4800
acctctggtt	aaaggaatca	acagcacaac	aatccatctt	aagtggtttc	cacctgaaga	4860
actgaatgga	ccctctccta	tatatcagct	ggaaaggaga	gagtcatctc	taccagctct	4920
gatgaccacg	atgatgaaag	gaatccgttt	cataggaaat	gggtattgta	aatttcccag	4980
ctccactcac	ccagtcaata	cagacttcac	tggtaagtgt	gtttgacatt	gctttattta	5040
ggagacacga	agctccaaaa	tgttttctat	attttcatat	ccctttacaa	tgaatttta	5100
tatacctac	ttagagaaat	actaattcag	ccctttgata	gcttttgcct	gattgtttca	5160
gcatgtccat	ctttttagaa	ttctggggaa	aaaagtcagg	taagtgaagg	aaaggaaaaa	5220
taaaagatga	agatgaagaa	gcagccttat	tggatcaaag	tatgtgcttt	gtatttgtct	5280
ttttgtgaag	tatgtgccag	gacatgtttc	ttgaaatatt	attcactgtg	ttctctgagc	5340
aaatgagttt	gcaaaatgcc	ctcatgctat	tggagattct	cagtatgcac	cccgttactg	5400
aaactccaaa	aagcattgta	agaaagctat	tcaactttgc	ttagctaatc	atgcctaaca	5460
gatatttgat	gtaatgtttt	ctttttcttt	ctcttgctgt	ttccttcttc	tttttttcac	5520
tgtgacaact	taatatctca	tgttctatga	agaacattgt	ggggaaaact	aatcccaggg	5580
aaaagataac	ttctctaagc	caggactatg	gtaaagcaag	tgaggctctt	gtttcggtca	5640
caaaatttaa	aggcactaaa	aaactcagtg	ttaatgtaaa	ttttaatgca	atatttttaa	5700
aaatgaaaat	caatgtgaaa	gcactataaa	aatattatca	aaagcttaaa	taaagacaga	5760
ttgaactctg	taccagcaca	atcctgcctc	actggcctta	ccctcctcct	ggccttacta	5820
gtaccgcaat	attttggaag	tcccatgacc	tctgtgactt	acagcttcta	atagcatgat	5880
ttcaatatag	ctgtaaaaaa	actctactta	tggtacacca	tttttccaat	ttttaaaaaa	5940
atttacaaag	tataagatat	atattattat	gtaaactcat	aaagatgttc	atttaatcat	6000
ccatgagaaa	gtcattttgg	agcaaatagc	tagtctttaa	aatattgcat	atgtgaagac	6060
aatgaaatgg	aattcgagct	ataaaaattt	gtattgtttt	atttttactt	aaaatagtaa	6120
atagtttgct	tttcattgag	actggctgct	gatgcacctt	ggtaatgaat	catgattata	6180

ttctaactga gatatattga gattaatgca tgattaacta ctctctcagt acatcaaaat 6240 cattgcagag tattagaaat tgaaccattg agctaaaaat gctcaacttc tgctttatat 6300 tcttaaaatg gcaaaaaaaa aaaaaaaaa 6330

<210>

<211> 1551

<212> **PRT** 

<213> Homo sapiens

<400>

Met Leu Phe Val Asn Met Asn Cys Pro Val Leu Ser Leu Gly Ser Gly 10 15Phe Leu Phe Gln Val Ile Glu Met Leu Ile Phe Ala Tyr Phe Ala Ser 20 25 30The Ser Leu Thr Glu Ser Arg Gly Leu Phe Pro Arg Leu Glu Asn Val 35 40 45 Gly Ala Phe Lys Lys Val Ser Ile Val Pro Thr Gln Ala Val Cys Gly
50 55 60 Leu Pro Asp Arg Ser Thr Phe Cys His Ser Ser Ala Ala Ala Glu Ser 65 70 75 80 Tle Gln Phe Cys Thr Gln Arg Phe Cys Ile Gln Asp Cys Pro Tyr Arg 85 90 95 Ser Ser His Pro Thr Tyr Thr Ala Leu Phe Ser Ala Gly Leu Ser Ser 100 105 110 Cys Ile Thr Pro Asp Lys Asn Asp Leu His Pro Asn Ala His Ser Asn 115 120 125 Ser Ala Ser Phe Ile Phe Gly Asn His Lys Ser Cys Phe Ser Ser Pro 130 135 140 Pro Ser Pro Lys Leu Met Ala Ser Phe Thr Leu Ala Val Trp Leu Lys 145 150 155 160 Pro Glu Gln Gln Gly Val Met Cys Val Ile Glu Lys Thr Val Asp Gly 165 170 175 Gln Ile Val Phe Lys Leu Thr Ile Ser Glu Lys Glu Thr Met Phe Tyr 180 190Tyr Arg Thr Val Asn Gly Leu Gln Pro Pro Ile Lys Val Met Thr Leu 195 200 205 Gly Arg Ile Leu Val Lys Lys Trp Ile His Leu Ser Val Gln Val His 210 215 220 Gln Thr Lys Ile Ser Phe Phe Ile Asn Gly Val Glu Lys Asp His Thr 225 230 235 240

Pro Phe Asn Ala Arg Thr Leu Ser Gly Ser Ile Thr Asp Phe Ala Ser 255 Gly Thr Val Gln Ile Gly Gln Ser Leu Asn Gly Leu Glu Gln Phe Val 265 270 Gly Arg Met Gln Asp Phe Arg Leu Tyr Gln Val Ala Leu Thr Asn Arg 275 280 285 Glu Ile Leu Glu Val Phe Ser Gly Asp Leu Leu Arg Leu His Ala Gln 290 295 300 Ser His Cys Arg Cys Pro Gly Ser His Pro Arg Val His Pro Leu Ala 305 310 315 320 Gln Arg Tyr Cys Ile Pro Asn Asp Ala Gly Asp Thr Ala Asp Asn Arg 325 330 335 Val Ser Arg Leu Asn Pro Glu Ala His Pro Leu Ser Phe Val Asn Asp 340 345 350 Asn Asp Val Gly Thr Ser Trp Val Ser Asn Val Phe Thr Asn Ile Thr 355 360 365 Gln Leu Asn Gln Gly Val Thr Ile Ser Val Asp Leu Glu Asn Gly Gln 375 380 Tyr Gln Val Phe Tyr Ile Ile Ile Gln Phe Phe Ser Pro Gln Pro Thr 385 390 395 400 Glu Ile Arg Ile Gln Arg Lys Lys Glu Asn Ser Leu Asp Trp Glu Asp 405 410 415 Trp Gln Tyr Phe Ala Arg Asn Cys Gly Ala Phe Gly Met Lys Asn Asn
420
430 Gly Asp Leu Glu Lys Pro Asp Ser Val Asn Cys Leu Gln Leu Ser Asn 435 440 445 Phe Thr Pro Tyr Ser Arg Gly Asn Val Thr Phe Ser Ile Leu Thr Pro
450 455 460 Gly Pro Asn Tyr Arg Pro Gly Tyr Asn Asn Phe Tyr Asn Thr Pro Ser 470 475 480 Leu Gln Glu Ser Val Lys Ala Thr Gln Ile Arg Phe His Phe His Gly 485 490 495 Gln Tyr Tyr Thr Thr Glu Thr Ala Val Asn Leu Arg His Arg Tyr Tyr 500 505 510 Ala Val Asp Glu Ile Thr Ile Ser Gly Arg Cys Gln Cys His Gly His 515 525 Ala Asp Asn Cys Asp Thr Thr Ser Gln Pro Tyr Arg Cys Leu Cys Ser 530 535 540 Gln Glu Ser Phe Thr Glu Gly Leu His Cys Asp Arg Cys Leu Pro Leu 545 550 555 560 Tyr Asn Asp Lys Pro Phe Arg Gln Gly Asp Gln Val Tyr Ala Phe Asn 565 570 575 Cys Lys Pro Cys Gln Cys Asn Ser His Ser Lys Ser Cys His Tyr Asn 7

Ile Ser Val Asp Pro Phe Pro Phe Glu His Phe Arg Gly Gly Gly 595 600 605 Val Cys Asp Asp Cys Glu His Asn Thr Thr Gly Arg Asn Cys Glu Leu 610 620 Cys Lys Asp Tyr Phe Phe Arg Gln Val Gly Ala Asp Pro Ser Ala Ile 625 630 635 640 Asp Val Cys Lys Pro Cys Asp Cys Asp Thr Val Gly Thr Arg Asn Gly 645 650 655 Ser Ile Leu Cys Asp Gln Ile Gly Gly Gln Cys Asn Cys Lys Arg His  $660 \hspace{1.5cm} 665 \hspace{1.5cm} 670 \hspace{1.5cm}$ Val Ser Gly Arg Gln Cys Asn Gln Cys Gln Asn Gly Phe Tyr Asn Leu 675 680 685 Gln Glu Leu Asp Pro Asp Gly Cys Ser Pro Cys Asn Cys Asn Thr Ser 690 695 700 Gly Thr Val Asp Gly Asp Ile Thr Cys His Gln Asn Ser Gly Gln Cys 705 710 715 720 Lys Cys Lys Ala Asn Val Ile Gly Leu Arg Cys Asp His Cys Asn Phe 725 730 735 Gly Phe Lys Phe Leu Arg Ser Phe Asn Asp Val Gly Cys Glu Pro Cys 740 745 750 Gln Cys Asn Leu His Gly Ser Val Asn Lys Phe Cys Asn Pro His Ser 765 765 Gly Gln Cys Glu Cys Lys Glu Ala Lys Gly Leu Gln Cys Asp Thr Cys Arg Glu Asn Phe Tyr Gly Leu Asp Val Thr Asn Cys Lys Ala Cys 785 790 795 800 Asp Cys Asp Thr Ala Gly Ser Leu Pro Gly Thr Val Cys Asn Ala Lys 805 810 815 Thr Gly Gln Cys Ile Cys Lys Pro Asn Val Glu Gly Arg Gln Cys Asn 820 825 830 Lys Cys Leu Glu Gly Asn Phe Tyr Leu Arg Gln Asn Asn Ser Phe Leu 835 Cys Leu Pro Cys Asn Cys Asp Lys Thr Gly Thr Ile Asn Gly Ser Leu 850 855 860 Leu Cys Asn Lys Ser Thr Gly Gln Cys Pro Cys Lys Leu Gly Val Thr 880 Gly Leu Arg Cys Asn Gln Cys Glu Pro His Arg Tyr Asn Leu Thr Ile 885 890 895 Asp Asn Phe Gln His Cys Gln Met Cys Glu Cys Asp Ser Leu Gly Thr 900 910 Leu Pro Gly Thr Ile Cys Asp Pro Ile Ser Gly Gln Cys Leu Cys Val 915 920 925

Pro Asn Arg Gln Gly Arg Arg Cys Asn Gln Cys Gln Pro Gly Phe Tyr 930 935 940 ile Ser Pro Gly Asn Ala Thr Gly Cys Leu Pro Cys Ser Cys His Thr Thr Gly Ala Val Asn His Ile Cys Asn Ser Leu Thr Gly Gln Cys Val Cys Gln Asp Ala Ser Ile Ala Gly Gln Arg Cys Asp Gln Cys Lys Asp His Tyr Phe Gly Phe Asp Pro Gln Thr Gly Arg Cys Gln Pro Cys Asn Cys His Leu Ser Gly Ala Leu Asn Glu Thr Cys His Leu Val Thr Gly Gln Cys Phe Cys Lys Gln Phe Val Thr Gly Ser Lys Cys Asp Ala Cys Val Pro Ser Ala Ser His Leu Asp Val Asn Asn Leu Leu Gly Cys Ser Lys Thr Pro Phe Gln Gln Pro Pro Pro Arg Gly Gln aval Glm Ser Ser Ser Ala Ile Asn Leu Ser Trp Ser Pro Pro Asp Ser Pro Asn Ala His Trp Leu Thr Tyr Ser Leu Leu Arg Asp Gly Phe Glu Ile Tyr Thr Thr Glu Asp Gln Tyr Pro Tyr Ser Ile Gln Tyr Phe Leu Asp Thr Asp Leu Leu Pro Tyr Thr Lys Tyr Ser Tyr Tyr Ile Glu Thr Thr Asn Val His Gly Ser Thr Arg Ser Val Ala Val Thr Tyr Lys Thr Lys Pro Gly Val Pro Glu Gly Asn Leu Thr Leu Ser Tyr Ile Ile Pro Ile Gly Ser Asp Ser Val Thr Leu Thr Thr Leu Ser Asn Gln Ser Gly Pro Ile Glu Lys Tyr Ile Leu Ser Cys Ala Pro Leu Ala Gly Gly Gln Pro Cys Val Ser Tyr Glu Gly His Glu Thr Ser Ala Thr Ile Trp Asn Leu Val Pro Phe Ala Lys Tyr Asp Phe Ser Val Gln Ala Cys Thr Ser Gly Gly Cys 1220 1230 Leu His Ser Leu Pro Ile Thr Val Thr Thr Ala Gln Ala Pro Pro 

Gln Arg Leu Ser Pro Pro Lys Met Gln Lys Ile Ser Ser Thr Glu Leu His Val Glu Trp Ser Pro Pro Ala Glu Leu Asn Gly Ile Ile Ile Arg Tyr Glu Leu Tyr Met Arg Arg Leu Arg Ser Thr Lys Glu Thr Thr Ser Glu Glu Ser Arg Val Phe Gln Ser Ser Gly Trp Leu Ser Pro His Ser Phe Val Glu Ser Ala Asn Glu Asn Ala Leu Lys Pro Pro Gln Thr Met Thr Thr Ile Thr Gly Leu Glu Pro Tyr Thr Lys Tyr Glu Phe Arg Val Leu Ala Val Asn Met Ala Gly Ser Val Ser Ser Ala Trp Val Ser Glu Arg Thr Gly Glu Ser Ala Pro Val Phe Met Ile Pro Pro Ser Val Phe Pro Leu Ser Ser Tyr Ser Leu Asn Ile Ser Trp Glu Lys Pro Ala Asp Asn Val Thr Arg Gly Lys Val Val Gly Tyr Asp Ile Asn Met Leu Ser Glu Gln Ser Pro Gln Gln Ser Ile Pro Met Ala Phe Ser Gln Leu Leu His Thr Ala Lys Ser Gln Glu Leu Ser Tyr Thr Val Glu Gly Leu Lys Pro Tyr Arg -Ile Tyr Glu Phe Thr Ile Thr Leu Cys Asn Ser Val Gly Cys Val Thr Ser Ala Ser Gly Ala Gly Gln Thr Leu Ala Ala Ala Pro Ala Gln Leu Arg Pro Pro Leu Val Lys Gly Ile Asn Ser Thr Thr Ile His Leu Lys Trp Phe Pro Pro Glu Glu Leu Asn Gly Pro Ser Pro Ile Tyr Gln Leu Glu Arg Arg Glu Ser Ser Leu Pro Ala Leu Met Thr Thr Met Met Lys Gly Ile Arg Phe Ile Gly Asn Gly Tyr Cys Lys Phe Pro Ser Ser Thr His Pro Val Asn Thr Asp Phe Thr Gly Lys Cys Val